

Comparative study of antioxidant activity in *in vivo* and *in vitro* samples of purple greater yam (*Dioscorea alata* L).

Sakinah Abdullah* and Rosna Mat Taha

Institute of Biological Sciences, Faculty of Science, University of Malaya, 50603, Kuala Lumpur, Malaysia

Abstract: Antioxidants are compounds that protect cells against the damaging effects of reactive oxygen species such as singlet oxygen, superoxide, peroxy radicals, and peroxy nitrite which result in oxidative stress leading to cellular damage. Natural antioxidant are in high demand because of their potential in health promotion and disease prevention and their improved safety and consumer acceptability. Plants are rich sources of natural antioxidant. *Dioscorea alata* L. known as “ubi badak” in Malaysia were well known for their antioxidant content but this plant was seasonal. Thus, tissue culture technique was used to mass propagate this plant. In the present work, a comparative study between *in vitro* (from tissue culture) and *in vivo* (from intact plant) samples of *Dioscorea alata* L. for their antioxidant potential by 2,2-diphenyl -1- picrylhydrazyl (DPPH) radical scavenging activity method and their total phenolic and flavonoid contents were carried out. All samples had better radical scavenging activity but *in vivo* samples had the strongest radical scavenging activity compared to *in vitro* samples. Furthermore, tubers from *in vivo* samples showed the greatest free radical scavenging effect and comparatively greater phenolic content than *in vitro* samples.

Keywords: *Dioscorea alata*, tissue culture, antioxidant, *in vivo*, *in vitro*, DPPH